

BA IN MATHEMATICS

The Bachelor of Arts degree in Mathematics requires a minimum of 120 hours of coursework, with a minimum of 35 credits of MATH courses, including those in a specific BA concentration. In addition, 18 hours of course work in a specific related area must be included.

BA in Mathematics with a concentration in Pure Mathematics

Prepares students for further study in mathematics at the graduate level, for jobs in the service or public sectors where a high level of quantitative skills is prerequisite, particularly in the financial industry, or with further pedagogical training for careers as secondary educators.

The concentration provides the foundations for an appreciation of the broad area of modern mathematics namely topology/geometry, algebra and analysis.

BA in Mathematics with a concentration in Applied Mathematics

Prepares students for further study in mathematics at the graduate level, for jobs in industrial, service or public sectors where a high level of quantitative skills is prerequisite. Examples of such career path include technical mathematicians, and financial analysts. The concentration provides the foundation for an understanding of the theoretical and computational principles of applied mathematics with an emphasis on modeling real world phenomena.

BA in Mathematics with a concentration in Statistics

Prepares students for further study in statistics at the graduate level, for jobs in industrial, service or public sectors where a knowledge of statistics is prerequisite. Examples of such career path include business or financial analysts, data scientists, or market researchers.

The concentration provides the foundation for understanding of both the theory and applications of statistics, including the application of statistical methodology to real world problems and the proficient use of statistics software.

For the Bachelor of Arts degree in mathematics, a minimum of 35 credits of MATH courses, including those in a specific BA concentration must be completed. In addition, 18 hours of course work in a specific related area must be included.

Pure Mathematics Concentration Course List

The following courses are required:

MATH 1840 Calculus II For Mathematicians, Scientists And Educators or MATH 1860 Single Variable Calculus II
 MATH 1890 Elementary Linear Algebra or MATH 2890 Numerical Methods And Linear Algebra
 MATH 2850 Elementary Multivariable Calculus
 MATH 2190 Foundations of Mathematics or MATH 3190 Introduction To Mathematical Analysis

Pure Mathematics Concentration courses

MATH 2860 Elementary Differential Equations
 MATH 4330 Abstract Algebra I
 MATH 4820 Introduction To Real Analysis I
 MATH 4880 Complex Variables

Select two of the following

MATH 4300 Linear Algebra I
 MATH 4450 Introduction To Topology I
 MATH 4540 Classical Differential Geometry I
 MATH 4830 Introduction To Real Analysis II
 MATH 4340 Abstract Algebra II

One advanced MATH elective course for 3 credits 3000 or 4000 level approved by the advisor

RELATED COURSES IN BACHELOR OF ARTS

The 18 semester hours of related area course (at 2000 to 4000 levels) should be chosen according to the interests of the student in view of his or her anticipated career in mathematics. The B.A. degree is awarded to those students who choose a related area in the humanities or social sciences, such as economics, foreign language, philosophy and psychology, or education.

Choices include courses numbered 2000 to 4990 for the following departments: AMST, ARTH, COMM, DST, FILM, GEPL, GLST, HIST, HON, LST, PHIL, PSC, PSY, REL, SOC, THR, WGST; or courses numbered 3000 to 4990 for the following departments: CLC, ENGL, FREN, GERM, HUM, JAPN, LAT, LING, SPAN; plus AFST 2100 to 4990, ANTH 2100 to 4990, ART 1080 to 4990, ECON 1150, 1200, 2000 to 4000, FLAN 3440, 2260, 2270, 2280, 2410, 2420, 2610, 2620, 3000 to 4000, excluding MUS 3010, 3020, 3030, 3040, 3050, 3090, 3130, 3140, 3150, 3160, 3170, 3180, 3190, 3800, 4800.

APPLIED MATHEMATICS CONCENTRATION COURSE LIST

The following courses are required:

MATH 1840 Calculus II For Mathematicians, Scientists And Educators or MATH 1860 Single Variable Calculus II
 MATH 1890 Elementary Linear Algebra or MATH 2890 Numerical Methods And Linear Algebra
 MATH 2850 Elementary Multivariable Calculus
 MATH 2190 Foundations of Mathematics or MATH 3190 Introduction To Mathematical Analysis

Applied Mathematics Concentration Courses

MATH 3320 Introduction To Abstract Algebra or MATH 4330 Abstract Algebra I
 MATH 2860 Elementary Differential Equations
 MATH 4300 Linear Algebra I or MATH 4350 Applied Linear Algebra
 MATH 4820 Introduction To Real Analysis I or MATH 4880 Complex Variables

Select one of the following two-semester sequences:

MATH 4710 Methods Of Numerical Analysis I & MATH 4720 Methods Of Numerical Analysis II

MATH 4740 Advanced Applied Mathematics I & MATH 4750 Advanced Applied Mathematics II

One advanced MATH elective course for 3 credits 3000 or 4000 level approved by the advisor

RELATED COURSES IN BACHELOR OF ARTS

The 18 semester hours of related area course (at 2000 to 4000 levels) should be chosen according to the interests of the student in view of his or her anticipated career in mathematics. The B.A. degree is awarded to those students who choose a related area in the humanities

or social sciences, such as economics, foreign language, philosophy and psychology, or education.

Choices include courses numbered 2000 to 4990 for the following departments: AMST, ARTH, COMM, DST, FILM, GEPL, GLST, HIST, HON, LST, PHIL, PSC, PSY, REL, SOC, THR, WGST; or courses numbered 3000 to 4990 for the following departments: CLC, ENGL, FREN, GERM, HUM, JAPN, LAT, LING, SPAN; plus AFST 2100 to 4990, ANTH 2100 to 4990, ART 1080 to 4990, ECON 1150, 1200, 2000 to 4000, FLAN 3440, 2260, 2270, 2280, 2410, 2420, 2610, 2620, 3000 to 4000, excluding MUS 3010, 3020, 3030, 3040, 3050, 3090, 3130, 3140, 3150, 3160, 3170, 3180, 3190, 3800, 4800.

Statistics CONCENTRATION COURSE LIST

The following courses are required:

MATH 1840 Calculus II For Mathematicians, Scientists And Educators
or MATH 1860 Single Variable Calculus II

MATH 1890 Elementary Linear Algebra or MATH 2890 Numerical
Methods And Linear Algebra

MATH 2850 Elementary Multivariable Calculus

MATH 2190 Foundations of Mathematics or MATH 3190 Introduction To
Mathematical Analysis

Statistics Concentration Courses

MATH 3610 Statistical Methods I

MATH 3620 Statistical Methods II

MATH 4350 Applied Linear Algebra

MATH 4600 Advanced Statistical Methods I

MATH 4610 Applications Of Statistics II

MATH 4680 Introduction To Theory Of Probability

MATH 4690 Introduction To Mathematical Statistics

Related Courses in Bachelor of Arts

The 18 semester hours of related area course (at 2000 to 4000 levels) should be chosen according to the interests of the student in view of his or her anticipated career in mathematics. The B.A. degree is awarded to those students who choose a related area in the humanities or social sciences, such as economics, foreign language, philosophy and psychology, or education.

Choices include courses numbered 2000 to 4990 for the following departments: AMST, ARTH, COMM, DST, FILM, GEPL, GLST, HIST, HON, LST, PHIL, PSC, PSY, REL, SOC, THR, WGST; or courses numbered 3000 to 4990 for the following departments: CLC, ENGL, FREN, GERM, HUM, JAPN, LAT, LING, SPAN; plus AFST 2100 to 4990, ANTH 2100 to 4990, ART 1080 to 4990, ECON 1150, 1200, 2000 to 4000, FLAN 3440, 2260, 2270, 2280, 2410, 2420, 2610, 2620, 3000 to 4000, excluding MUS 3010, 3020, 3030, 3040, 3050, 3090, 3130, 3140, 3150, 3160, 3170, 3180, 3190, 3800, 4800.

Bachelor of Art In Mathematics: Concentration: Pure Mathematics

Below is a sample plan of study. Consult your degree audit for your program requirements.

First Term		Hours
NSM 1000	Natural Sciences & Mathematics	2
MATH 1830 or MATH 1850	Calculus I For Mathematicians, Scientists And Educators or Single Variable Calculus I	4
ENGL 1110	College Composition I	3
Natural Sciences Core		3
Social Sciences Core		3
Hours		15
Second Term		Hours
MATH 1840 or MATH 1860	Calculus II For Mathematicians, Scientists And Educators or Single Variable Calculus II	4
ENGL 1130	College Composition II: Academic Disciplines And Discourse	3
MATH 1890 or MATH 2890	Elementary Linear Algebra or Numerical Methods And Linear Algebra	3
Natural Sciences Core		4
Natural Sciences Core Laboratory		1
Hours		15
Third Term		Hours
MATH 2850	Elementary Multivariable Calculus	4
MATH 3190 or MATH 2190	Introduction To Mathematical Analysis or Foundations of Mathematics	3
Non-US Diversity		3
Arts/Humanities Core		3
NSM Science Elective		3
Hours		16
Fourth Term		Hours
MATH 3320	Introduction To Abstract Algebra ¹	3
MATH 2860	Elementary Differential Equations	3
US Diversity		3
Arts/Humanities Core		3
NSM Science Elective		3
Hours		15
Fifth Term		Hours
MATH 4330	Abstract Algebra I	3
NSM Elective		3
Elementary Foreign Language I		4
Arts/Humanities Core (History)		3
Related Elective		3
Hours		16
Sixth Term		Hours
MATH 4880	Complex Variables	3
Advanced Math Elective		3
Elementary Foreign Language II		4
Related Elective		3
Writing Across the Curriculum (WAC)		3
Hours		16

Seventh Term

MATH 4820	Introduction To Real Analysis I	3
Select one of the following:		3
MATH 4450	Introduction To Topology I	
MATH 4300	Linear Algebra I	
MATH 4540	Classical Differential Geometry I	
Advanced Math Elective		3
Arts/Humanities Core (Fine Arts)		3
Related Elective		3
Hours		15

Eighth Term

Arts/Humanities Core (English Lit)		3
MATH 4340	Abstract Algebra II	3
	or MATH 4830 or Introduction To Real Analysis II	
Related Elective		3
Social Science Core		3
Hours		12
Total Hours		120

¹ Recommended 3000/4000 elective

Bachelor of Art in Mathematics: Concentration: Applied Mathematics

Below is a sample plan of study. Consult your degree audit for your program requirements.

First Term		Hours
NSM 1000	Natural Sciences & Mathematics	2
MATH 1830	Calculus I For Mathematicians, Scientists	4
	or MATH 1850 And Educators	
	or Single Variable Calculus I	
ENGL 1110	College Composition I	3
Natural Sciences Core		3
Social Sciences Core		3
Hours		15

Second Term

MATH 1840	Calculus II For Mathematicians, Scientists	4
	or MATH 1860 And Educators	
	or Single Variable Calculus II	
ENGL 1130	College Composition II: Academic Disciplines And Discourse	3
MATH 1890	Elementary Linear Algebra	3
	or MATH 2890 or Numerical Methods And Linear Algebra	
Natural Sciences Core		4
Natural Science Core Laboratory		1
Hours		15

Third Term

MATH 2850	Elementary Multivariable Calculus	4
MATH 3190	Introduction To Mathematical Analysis	3
	or MATH 2190 or Foundations of Mathematics	

Non-US Diversity		3
Arts/Humanities Core		3
NSM Science Elective		3
Hours		16

Fourth Term

MATH 3320	Introduction To Abstract Algebra ¹	3
MATH 2860	Elementary Differential Equations	3
Arts/Humanities Core		3
Social Sciences Core		3
Diversity of US		3
Hours		15

Fifth Term

MATH 4710	Methods Of Numerical Analysis I	3
	or MATH 4740 or Advanced Applied Mathematics I	
Elementary Foreign Language I		4
Arts/Humanities Core (History)		3
NSM Science Elective		3
Related Elective		3
Hours		16

Sixth Term

MATH 4720	Methods Of Numerical Analysis II	3
	or MATH 4750 or Advanced Applied Mathematics II	
MATH 4880	Complex Variables ²	3
Elementary Foreign Language II		4
Related Elective		3
Writing Across the Curriculum (WAC)		3
Hours		16

Seventh Term

Advanced Math Elective		3
Arts/Humanities Core (Fine Arts)		3
Social Sciences Core		3
Related Elective		6
Hours		15

Eighth Term

MATH 4350	Applied Linear Algebra ³	3
Arts/Humanities (English Lit)		3
Advanced Math Elective		3
Related Elective		3
Hours		12
Total Hours		120

¹ May take MATH 4330 instead in fall semester.

² May take MATH 4820 instead in fall semester

³ May take MATH 4300 instead in fall semester

Bachelor of Art in Mathematics: Concentration: Statistics

Below is a sample program of study. Consult your degree audit for your program requirements.

First Term		Hours
NSM 1000	Natural Sciences & Mathematics	2
MATH 1830 or MATH 1850	Calculus I For Mathematicians, Scientists And Educators or Single Variable Calculus I	4
ENGL 1110	College Composition I	3
Natural Sciences Core		3
Social Sciences Core		3
Hours		15

Second Term		Hours
MATH 1840 or MATH 1860	Calculus II For Mathematicians, Scientists And Educators or Single Variable Calculus II	4
ENGL 1130	College Composition II: Academic Disciplines And Discourse	3
MATH 1890 or MATH 2890	Elementary Linear Algebra or Numerical Methods And Linear Algebra	3
Natural Sciences Core		4
Natural Sciences Core Laboratory		1
Hours		15

Third Term		Hours
MATH 2850	Elementary Multivariable Calculus	4
MATH 3190 or MATH 2190	Introduction To Mathematical Analysis or Foundations of Mathematics	3
MATH 3610	Statistical Methods I	3
Non-US Diversity		3
Arts/Humanities Core		3
Hours		16

Fourth Term		Hours
MATH 2860	Elementary Differential Equations	3
MATH 3620	Statistical Methods II	3
Arts/Humanities Core		3
Diversity of US		3
Related Field		3
Hours		15

Fifth Term		Hours
MATH 4680	Introduction To Theory Of Probability	3
Elementary Foreign Language I		4
Arts/Humanities Core (History)		3
Social Sciences Core		3
NSM Science Elective		3
Hours		16

Sixth Term		Hours
MATH 4690	Introduction To Mathematical Statistics	3
Elementary Foreign Language II		4
Writing Across the Curriculum (WAC)		3
Related Elective		3
NSM Science Elective		3
Hours		16

Seventh Term		Hours
MATH 4600	Advanced Statistical Methods I	3
Advanced Math Elective		3
Art/Humanities Core (Fine Arts)		3
Social Sciences Core		3
Related Elective		3

Eighth Term		Hours
MATH 4350	Applied Linear Algebra	3
MATH 4610	Applications Of Statistics II	3
Arts/Humanities Core (English Lit)		3
Related Elective		3
Hours		12

Total Hours **120**

- PLO 1. Students will produce and judge the validity of rigorous mathematical arguments.
- PLO 2. Students will explain and illustrate mathematical ideas and arguments.
- PLO 3. Students will read and construct mathematical proofs.
- PLO 4. Students will construct proofs and/or derivations of mathematical statements.